

What is Claimed Is:

1. A method for increasing data throughput in a communications channel comprising the steps of:

selecting a first data packet from a queue of data packets to be transmitted over said communications channel;

modulating said first data packet using a first modulation scheme;

selecting a second data packet from a queue of data packets to be transmitted over said communications channel;

modulating said second data packet using a second modulation scheme overlaying said first data packet;

transmitting said first data packet overlaid with said second data packet over said communications channel;

determining whether said first data packet was received by monitoring using said first modulation scheme for an acknowledgment for said first data packet before expiration of a timeout period;

determining whether said second data packet was received by monitoring said first modulation scheme for an acknowledgment for said second data packet before expiration of said timeout period; and

repeating all of the the steps outlined above, if acknowledgments were received for both said first and said second data packets.

2. The method according to claim 1, wherein said overlaying of said second data packet on said first data packet is performed on a symbol-by symbol basis.
3. The method according to claim 1, wherein said communications channel is subject to fading.
4. The method according to claim 1, wherein said communications channel is subject to non-AWGN impairments.
5. The method according to claim 1, wherein said second modulation scheme is amplitude limited.
6. The method according to claim 1, wherein both said first and said second modulation schemes use QAM.
7. The method according to claim 1, wherein both said first and said second modulation schemes use QPSK.
8. The method according to claim 1, wherein said first and said second modulation schemes are different from each other.
9. A method for for increasing data throughput in a communications channel comprising the steps of:

selecting a first data packet from a queue of data packets to be transmitted over said communications channel;

modulating said first data packet using a first modulation scheme;

selecting a second data packet from a queue of data packets to be transmitted over said communications channel;

modulating said second data packet using a second modulation scheme overlaying said first data packet;

transmitting said first data packet overlaid with said second data packet over said communications channel;

determining whether said first data packet was received by monitoring using said first modulation scheme for an acknowledgment for said first data packet before expiration of a timeout period;

determining whether said second data packet was received by monitoring using said first modulation scheme for an acknowledgment for said second data packet before expiration of said timeout period; and

using said second data packet as the selected first packet and repeating the steps outlined above commencing with said modulating step for said first data packet, if no acknowledgment was received for said second data packet prior to expiration of said timeout period.

10. The method according to claim 9, wherein said overlaying of said second data packet on said first data packet is performed on a symbol-by symbol basis.

11. The method according to claim 9, wherein said communications channel is subject to fading.
12. The method according to claim 9, wherein said communications channel is subject to non-AWGN impairments.
13. The method according to claim 9, wherein said second modulation scheme is amplitude limited.
14. The method according to claim 9, wherein both said first and said second modulation schemes use QAM.
15. The method according to claim 7, wherein both said first and said second modulation schemes use QPSK.
16. The method according to claim 9, wherein said first and said second modulation schemes are different from each other.
17. A system for for increasing data throughput in a communications channel comprising:
 - means for selecting a first data packet from a queue of data packets to be transmitted over said communications channel;
 - means for modulating said first data packet using a first modulation scheme;

means for selecting a second data packet from a queue of data packets to be transmitted over said communications channel;

means for modulating said second data packet using a second modulation scheme overlaying said first data packet;

means for transmitting said first data packet overlaid with said second data packet over said communications channel;

means for determining whether said first data packet was received by monitoring using said first modulation scheme for an acknowledgment for said first data packet before expiration of a timeout period;

means for determining whether said second data packet was received by monitoring using said first modulation scheme for an acknowledgment for said second data packet before expiration of said timeout period; and

means for performing an iterative loop encompassing the system above, if acknowledgments were received for both said first and said second data packets.

18. The method according to claim 17, wherein said overlaying of said second data packet on said first data packet is performed on a symbol-by symbol basis.

19. The system according to claim 17, wherein said communications channel is subject to fading.

20. The method according to claim 17, wherein said communications channel is subject to non-AWGN impairments.

21. The system according to claim 17, wherein said second modulation scheme is amplitude limited.
22. The method according to claim 17, wherein both said first and said second modulation schemes use QAM.
23. The system according to claim 17, wherein both said first and said second modulation schemes use QPSK.
24. The system according to claim 17, wherein said first and said second modulation schemes are different from each other.
25. A system for for increasing data throughput in a communications channel comprising the steps of:
- means for selecting a first data packet from a queue of data packets to be transmitted over said communications channel;
 - means for modulating said first data packet using a first modulation scheme;
 - means for selecting a second data packet from a queue of data packets to be transmitted over said communications channel;
 - means for modulating said second data packet using a second modulation scheme overlaying said first data packet;
 - means for transmitting said first data packet overlaid with second data packet over said communications channel;

means for determining whether said first data packet was received by monitoring using said first modulation scheme for an acknowledgment for said first data packet before expiration of a timeout period;

means for determining whether said second data packet was received by monitoring using said first modulation scheme for an acknowledgment for said second data packet before expiration of said timeout period;

means for using said second data packet as the selected first packet; and

means for performing an iterative loop of a portion of the system outlined above commencing with said means for modulating said first data packet, if no acknowledgment was received for said second data packet prior to expiration of said timeout period.

26. The method according to claim 25, wherein said overlaying of said second data packet on said first data packet is performed on a symbol-by symbol basis.

27. The system according to claim 25, wherein said communications channel is subject to fading.

28. The system according to claim 25, wherein said communications channel is subject to non-AWGN impairments.

29. The system according to claim 25, wherein said second modulation scheme is amplitude limited.

30. The method according to claim 25, wherein both said first and said second modulation schemes use QAM.

31. The system according to claim 25, wherein both said first and said second modulation schemes use QPSK.

32. The system according to claim 25, wherein said first and said second modulation schemes are different from each other.